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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P502510PCTWMB		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/GB2004/001067		International filing date (day/month/year) 12.03.2004		Priority date (day/month/year) 20.03.2003
International Patent Classification (IPC) or national classification and IPC A61F2/64, A61F2/68				
Applicant CHAS A. BLATCHFORD & SONS LIMITED et al.				
<p>1. This report is the International preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 2 sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the International application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 20.01.2005		Date of completion of this report 28.09.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office - Glitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840		Authorized Officer Kuehne, H-C Telephone No. +49 30 25901-579		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/001067

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-15 as originally filed

Claims, Numbers

4-26, 27(part) as originally filed
1-3, 27(part), 28 received on 21.01.2005 with letter of 20.01.2005

Drawings, Sheets

1/4-4/4 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/001067

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-28
	No: Claims	
Inventive step (IS)	Yes: Claims	1-28
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-28
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

1. Although claims 1, 17, 22 and 27 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

2. Document DE9320853U, which is considered to represent the most relevant state of the art, discloses a knee joint mechanism with piston and valve arrangement to control movement of the knee. When the leg is loaded, hydraulic passage to valves is blocked to resist movement from which the subject-matter of claim 1 differs in that the knee joint mechanism includes a stabilising device which in stabilising position restricts the fluid flow, and the valve member is movable towards its open position in response to fluid pressure in the interconnecting passage upstream of the valve member caused by application of a flexion torque to the knee joint mechanism.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

3. The problem to be solved by the present invention may be regarded as no fine control by the knee joint mechanism is possible. The valve is either open or closed when weight is placed on the tibia.

4. The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: A mechanical linkage (or hydraulic arrangement) operates on the valves themselves within the hydraulic circuit. According to applicant this gives better control. None of the documents cited in the search reports hints to such a solution.

The same reasoning applies, *mutatis mutandis*, to the subject-matter of the corresponding independent claim 17, 22 and 27, which therefore is also considered new and

inventive.

5.1. Claims 2-16 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

5.2. The same reasoning applies, mutatis mutandis, to the subject-matter of the dependent claims 18-21 dependent on 17, dependent claims 23-26 dependent on 22 and dependent claim 28 dependent on 27 which therefore are also considered new and inventive.

It is furthermore remarked:

6.1. Claims 17, 22 and 27 comprise all the features of claim 1 and are therefore not appropriately formulated as claims dependent on the latter (Rule 6.4 PCT).

6.2. Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

6.3. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

Claims

1. A prosthetic knee joint mechanism comprising first and second knee parts which are rotatable relative to each other in joint flexion and joint extension, and a
5 load-activated knee-stabilising device for resisting joint flexion, the stabilising device comprising means defining a fluid-filled fluid displacement chamber associated with the first knee part and a piston which is connected to the second knee part so as to be driven by rotation of the second knee part relative to the first knee part and which is so arranged within the chamber that it divides the chamber into first and second variable
10 volume chamber parts which are interconnected by a fluid passage, the stabilising device further comprising a valve associated with the fluid passage and including a valve member which is movable between an open position in which fluid can flow through the passage to allow joint flexion and a stabilising position in which such fluid flow is at least restricted, wherein the valve member is movable towards its open
15 position in response to fluid pressure in the interconnecting passage upstream of the valve member caused by application of a flexion torque to the knee joint mechanism, and wherein the stabilising device includes a weight-responsive valve control arrangement to at least resist movement of the valve member in the direction of its open position.
- 20 2. A mechanism according to claim 1, wherein the displacement chamber is in the first knee part and is centred on an axis of relative rotation of the first and second knee parts, and the piston is a rotary piston which rotates with the second knee part.
- 25 3. A mechanism according to claim 1 or claim 2, wherein the valve comprises a main valve in which the valve member is movable in a fluid-filled valve cavity, and wherein the control arrangement comprises a weight-responsive pilot valve forming part of a secondary fluid passage which communicates with the valve cavity for hydraulically resisting movement of the valve member of the main valve in the
30 direction of its open position.

chamber associated with the first joint part and a piston which is connected to the second joint part so as to be driven in the chamber by relative rotation of the joint parts, the stabilising device including an hydraulic valve controlling the flow of fluid to and/or from the fluid displacement chamber; wherein the valve comprises a valve member which is movable between an open position and a closed position in a valve cavity in response to an external force on the valve member, the cavity having an inlet port at least indirectly in communication with the fluid displacement chamber, and an outlet port which is closed by the valve member when in the closed position, the valve member being resiliently biased towards the closed position and having a piston part located in a bore which opens into the cavity on an opposite side of the cavity from the outlet port, and wherein the effective sealing area of the said piston part in the bore is greater than the effective sealing area of the valve member at the outlet port, whereby the valve member is caused to move away from its closed position in the event of pressure in the cavity caused by an excessive flexion moment applied to the joint mechanism.

28. A joint mechanism according to claim 27, wherein the valve is a pilot valve arranged to control operation of a main hydraulic valve which is located in a primary hydraulic passage between parts of the fluid displacement chamber on respective opposite sides of the piston.